MSE-657  
CCMX Winter School - Additive Manufacturing of Metals and the Material Science Behind It  
Ceriotti Michele, Logé Roland, Various lecturers

**Cursus**  
Science et génie des matériaux  
Sem.  
Type Obl.

<table>
<thead>
<tr>
<th>Language</th>
<th>English</th>
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<tbody>
<tr>
<td>Credits</td>
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<tr>
<td>Session</td>
<td>Oral presentation</td>
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<td>Exam</td>
<td>Works: 60h</td>
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<td>Workload</td>
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<tr>
<td>Hours</td>
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<td>Lecture</td>
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<td>Exercises</td>
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<td>Number of positions</td>
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**Frequency**  
Every year

**Summary**  
This course is designed to cover a series of important scientific aspects related to the field of additive manufacturing of metals and alloys and to provide an in-depth review of corresponding fundamentals. It features 9 modules consisting of presentations given by lecturers and the participants.

**Content**  
Please find the information on the following link:  

**Keywords**  
Additive manufacturing, metals, atomistic modelling, rapid solidification, alloys for additive manufacturing, in situ experiments, Laser/e-beam - material interactions  
Atomistic modelling of solidification in out-of-equilibrium conditions  
Fundamentals of rapid solidification  
Optimization of alloys for AM  
In situ experiments with Xrays and neutrons at large facilities  
Post-treatments, microstructure evolutions and properties  
EBM processing and contrast with the SLM approach  
Important aspects to be considered in industrial applications

The course is organised as a 5 day retreat to allow for extensive informal interactions.

**Learning Prerequisites**  
**Required courses**  
Participants should be educated in materials science and engineering, physics, mechanical engineering or physical chemistry to benefit the most from this course.

**Assessment methods**  
Oral presentation (prepared based upon a series of publications provided by the lecturers)

**Resources**  
Websites